

CLAIMS

1. A process for the manufacturing of a decorative surface element, which element comprises a base layer and a decorative upper surface, ~~characterised~~ in that a radiation curing lacquer is printed in a predetermined pattern as an uppermost layer on the decorative upper surface, the radiation curing lacquer covering only parts of the decorative upper surface whereby the lacquer is exposed to radiation whereby it cures whereby a surface structure is achieved.
2. A process according to claim 1, ~~characterised~~ ^{characterized} in that the radiation curing lacquer is cured by UV or electron beam radiation and consists of an acrylic, epoxy or a maleimide lacquer.
3. A process according to claim 1 or 2, ~~characterised~~ ^{characterized} in that the radiation curing lacquer is applied in several steps with intermediate curing.
4. A process according to ~~any of the claims 1-3~~ ^{claim 1}, ~~characterised~~ ^{characterized} in that the radiation curing lacquer includes hard particles with an average particle size in the range 50nm - 150µm.
5. A process according to claim 4, ~~characterised~~ ^{characterized} in that the hard particles consists of for example silicon oxide, α-aluminium oxide or silicon carbide.
6. A process according to claim 4, ~~characterised~~ ^{characterized} in that the main part of the hard particles consists of for example silicon oxide, α-aluminium oxide or silicon carbide while a smaller amount of the hard particles consist of diamond.
7. A process according to claim 6, ~~characterised~~ ^{characterized} in that the hard particles consisting of diamond is in the average particle size range 50nm - 2µm and is placed close to the upper surface of the wear layer.
8. A process according to claim 1, ~~characterised~~ ^{characterized} in that the radiation curing lacquer is applied by means of an ink-jet printer.

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9. A process according to claim 8, ²⁶~~characterised~~ ^{characterized} in that the radiation curing lacquer is translucent.
10. A process according to claim 8, ~~characterised~~ ^{characterized} in that the radiation curing lacquer is semi-translucent.
11. A process according to claim 8, ~~characterised~~ ^{characterized} in that the radiation curing lacquer includes a matting agent which creates a structure enhancing effect in the structure.
12. A process according to ~~any of the claims 1-11~~ ^{characterized} ~~characterised~~ in that the decorative upper layer further comprises a decor layer and a wear layer, which wear layer is applied on top of the decor layer whereby the radiation curing lacquer is applied on top of the wear layer.
13. A process according to claim 12, ~~characterised~~ ^{characterized} in that the wear layer comprises UV or electron beam curing lacquer of an acrylic, epoxy or a maleimide lacquer which is cured before the step where the uppermost, structured layer is applied.
14. A process according to claim 12 ~~or 13~~ ^{characterized} ~~characterised~~ in that the wear layer comprises hard particles with an average particle size in the range 50nm - 150µm.
15. A process according to claim 14, ~~characterised~~ ^{characterized} in that the hard particles consists of for example silicon oxide, α-aluminium oxide or silicon carbide.
16. A process according to claim 1 ~~or 8~~ ^{characterized} ~~characterised~~ in that the decorative upper surface comprises a decor layer, which decor layer originates from a digitally stored original, that the digitally stored original is processed in order to achieve a digital structure original whereby a surface structure that in every essential aspect matches the decor is achieved.

~~characterized~~

17. A process according to claim 16, ~~characterised~~ in that the digital structure original is used for guiding the ink-jet printer used for printing the radiation curing lacquer of the uppermost, structured layer.

~~characterized~~

18. A process according to claim 1 or 12, ~~characterised~~ in that,

- i) the radiation curing lacquer is printed in a predetermined pattern on the decorative upper surface, the radiation curing lacquer covering only parts of the decorative upper surface whereupon,
- ii) hard particles with an average particle size in the range 1 - 150 μm is sprinkled on the still sticky lacquer whereupon,
- iii) the lacquer is exposed to radiation so that it cures whereupon,
- iv) possible residual particles are removed whereupon,
- v) a layer of UV or electron beam curing lacquer is applied on the decorative upper surface in one or more steps, so that the particles becomes mainly embedded in the lacquer.